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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,234	07/26/2000	Keishi Nishikubo	49762(868)	7950

21874 7590 02/10/2004

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EXAMINER	
NGUYEN, JIMMY H	
ART UNIT	**PAPER NUMBER**
2673	16

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/626,234	NISHIKUBO ET AL.	
	Examiner	Art Unit	
	Jimmy H. Nguyen	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/21/2004 has been entered. Claims 1-11 are currently pending in the application. An action on the RCE follows:

2. **It is noted to the applicants that the currently amended claim 3 has left off the limitation, "wherein positive-side (high level) voltage resistance division ratios and negative-side (low level) voltage resistance division ratios of the resistance-type voltage division circuit are set so as to be asymmetrical with one another depending on level shift characteristics respectively associated with each said target gray scale level" (see the amendment filed on 11/20/2003). In order to further consider, the examiner assumes the applicants purposely remove the above underlined limitation.**

Specification

3. The amendment filed 1/21/2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "In particular, **the resistance division ratios** ... **respectively constitute the ratios of the effective resistances** of the series-connected resistors ... circuit", see the amendment page 2.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

4. Claim 1 is objected to because of the following informalities: lines 25 and 26, "effective" should be deleted, so as to make the claimed features in lines 8 and 23 to be consistent with the claimed features in lines 25-27. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding to claims above, the disclosure, when filed, does not contain sufficient information regarding to the claimed features, "the respective **effective resistance values** ... respectively", of independent claims **1** (see lines 14-24) and **3** (see lines 18-29), "resistance division ratios between **effective resistance values** of the respective resistors making up each said pair of adjacent resistors of the resistance-type voltage division circuit", of independent claims **2** (lines 14-17), **4** (see lines 17-20), **8** (see lines 25-28), **9** (see lines 13-16) and **10** (see lines 17-20), "positive-side ... between **effective resistance values** of the respective resistors making up each said pair of adjacent resistors of the resistance-type voltage division circuit", of independent claim **7** (lines 28-33). The disclosure, page 28, lines 3-13, discloses the resistance

values of the series resistors for generating the positive-side and negative side gray scale voltages. However, the **effective** resistance values in the above underlined features are not found in the original disclosure.

7. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding to claims 1, 5 and 7, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, "positive-side (high level) voltage resistance division ratios and negative-side (low level) voltage resistance division ratios are set so as to be asymmetrical with one another depending on level shift characteristics respectively associated with each said target gray scale level", of independent claims 1 (see last 8 lines) and 7 (see lines 28-37), so as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 7 through page 28, line 13, discloses that the output voltage of the source driver at each gray scale level must be set so as to be vertically symmetrical (specifically at page 27, lines 13-14) and the resistance values of the series resistors for generating the positive-side gray scale voltages are set vertically asymmetrical with the resistance values of the series resistors for generating the negative-side gray scale voltages in consideration of the correction of the level shift characteristic (specifically at page 28, lines 8-13). However, the disclosure, when filed, does not provide expressly the **definition** of "positive-side (high level) voltage resistance division ratios" and "negative-side (low level) voltage resistance division ratios". Further, the examiner at least expects the applicants, referring to fig. 3, disclosing an expression or a formula

used to determine a positive-side (high level) or negative-side voltage resistance division ratio at a particular selected one of the resistance junctions or intersections in terms of resistors and/or other elements, as shown in fig. 3, so as to enable one skilled in the pertinent art to understand what the applicants mean "a positive-side (high level) or negative-side voltage resistance division ratio", in order to set the positive-side (high level) voltage resistance division ratios and negative-side (low level) voltage resistance division ratios to be asymmetrical with one another depending on level shift characteristics, as claimed.

Regarding to claim 3, the disclosure, when filed, does not contain sufficient information regarding to the claimed features, "positive-side (high level) voltage resistance division ratios" and "negative-side (low level) voltage resistance division ratios", of independent claim 3 (see lines 22, 23, 28 and 29), so as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 7 through page 28, line 13, discloses that the resistance values of the series resistors for generating the positive-side gray scale voltages and the negative-side gray scale voltages. However, the disclosure, when filed, does not provide expressly the **definition** of "positive-side (high level) voltage resistance division ratios" and "negative-side (low level) voltage resistance division ratios". Further, the examiner at least expects the applicants, referring to fig. 3, to provide an expression or a formula used to determine a positive-side (high level) or negative-side voltage resistance division ratio at a particular selected one of the resistance junctions or intersections in terms of resistors and/or other elements, as shown in fig. 3, so as to enable one skilled in the pertinent art to understand what the applicants mean "a positive-side (high level) or negative-side voltage resistance

division ratio", in order to enable one skilled in the pertinent art to make and use the claimed invention.

Regarding to claims 2, 4, 6 and 8, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, "resistance division ratios of the resistance-type voltage division circuit are set to conform to the target gray scale display characteristics associated with said target gray scale levels", of independent claims 2 (see lines 14-19), 4 (see lines 17-23) and 8 (see lines 25-30), so as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 21 through page 28, line 13 and page 29, lines 10-12, discloses that the resistance values of the series resistors are set in consideration of the correction of the level shift characteristic (specifically at page 28, lines 8-13) and the level shift depends on the gray scale voltages (specifically at page 29, lines 10-12). However, the disclosure, when filed, does not provide expressly the **definition** of "resistance division ratios". Further, the examiner at least expects the applicants, referring to fig. 3, disclosing an expression or a formula used to determine a resistance division ratio at a particular selected one of the resistance junctions or intersections in terms of resistors and/or other elements, as shown in fig. 3, so as to enable one skilled in the pertinent art to understand what the applicants mean "resistance division ratios", in order to set the resistance division ratios to conform to the target gray scale display characteristics associated with the target gray scale levels, as claimed.

Regarding to claims 9-11, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, "resistance division ratios of the resistance-type voltage division circuit are set to conform to the target level shift characteristics and γ characteristics of the target gray scale levels", of independent claims 9 (see lines 13-18) and 10

(see lines 17-22), so as to enable one skilled in the pertinent art to make and use the claimed invention. The disclosure, page 27 line 21 through page 28, line 13 and page 29, lines 10-12, discloses that the resistance values of the series resistors are set in consideration of the correction of the level shift characteristic (specifically at page 28, lines 8-13) and the level shift depends on the gray scale voltages (specifically at page 29, lines 10-12). However, the disclosure, when filed, does not provide expressly the **definition** of "resistance division ratios". Further, the examiner at least expects the applicants, referring to fig. 3, disclosing an expression or a formula used to determine a resistance division ratio at a particular selected one of the resistance junctions or intersections in terms of resistors and/or other elements, as shown in fig. 3, so that to enable one skilled in the pertinent art to understand what the applicants mean "resistance division ratios", in order to set the resistance division ratios to conform to the target level shift characteristics and γ characteristics of the target gray scale levels, as claimed.

8. **It is noted to Applicants that due to the rejection under 35 USC 112 above, the following art rejections are based as best understood by the examiner.**

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamei et al. (USPN: 5,640,174, cited in IDS filed on 11/14/2001), hereinafter Kamei, and further in view of Nitta et al (USPN: 6,275,207 B1), hereinafter Nitta.

As per claims above, the claimed invention reads on Kamei as follows: as noting in fig. 1, Kamei discloses an active matrix liquid crystal display device comprising a plurality of pixels disposed in a matrix (col. 1, line 63), a plurality of data signal lines (drain signal lines, col. 3, lines 38-39), a plurality of scanning signal lines (scanning lines , col. 4, line 39), switching devices (TFTs, col. 1, lines 19-20), and a source line driver (fig. 1), which comprises a grayscale reference voltage generation circuit (a circuit including elements (4-8)) and a source driver (a circuitry including a voltage dividing resistor circuit (col. 2, line 64), a buffer (9) and drain drivers (10, 11)) including a plurality of input terminals, one of said input terminals supplied with a positive-side highest level reference voltage (a positive maximum voltage (+V1), col. 2, lines 57-59) and to the other of said input terminals supplied with a negative-side highest level reference voltage (a negative maximum voltage (-V1), col. 2, lines 59-61), for generating positive-side gray scale voltages (V1-Vn) and negative-side gray scale voltages (V'1-V'n) based on the positive-side highest level reference voltage and the negative-side highest level reference voltage (col. 3, lines 6-11). Furthermore, as noting in figs. 6a-6b and at col. 3, lines 6-19, col. 4, line 49 through col. 5, line 5, Kamei further teaches that the positive-side voltage division ratios and negative-side voltage division ratios are set to be asymmetrical with one another depending on level shift characteristics and target gray scale display characteristics respectively associated with each target gray scale level. Accordingly, the difference between the invention defined in claims above and the Kamei reference is that Kamei discloses the voltage division ratios while the claimed invention recites the resistance division ratios. However, Nitta discloses expressly that changing the voltage division ratio is obtained by changing the resistance dividing ratio (col. 6, lines 9-67, specifically at lines 9-15 and lines 65-67). It would have been obvious to a person

of ordinary skill in the art at the time of the invention was made to utilize Nitta's teaching, i.e., changing the resistance division ratio instead of changing the voltage division ratio, in the display device of Kamei because this would improve the display brightness and the variation characteristics of color displayed images, which are matched with a user's taste, as taught by Nitta (col. 1, lines 49-58 and col. 9, lines 46-51).

Response to Arguments

11. With respect to the art rejection, the Applicants argue that since elements 10 and 11 of Kamei correspond to the source driver of the present specification and the Kamei voltage dividing resistor circuit corresponds to the gray scale voltage generation circuit of the present specification, the Kamei gray scale voltage generation circuit is not an internal part of the source driver, the Examiner disagrees because (i) as stated above, the examiner states that the claimed invention reads on Kamei, and (ii.) as described clearly in the rejection above, the Kamei circuitry, which includes a voltage dividing resistor circuit (col. 2, line 64), a buffer (9) and drain drivers (10, 11), **corresponds to the claimed source driver**, because the Kamei circuitry includes all the claimed features of the claimed source driver, such as a voltage dividing resistor circuit (fig. 1, col. 2, line 64) **corresponding to the claimed resistance-type voltage division circuit**, and provides functions as the functions of the claimed source driver. Accordingly, the Kamei resistance -type voltage division circuit is an **internal** part of the Kamei source driver.

For the above reasons, it is believed that the rejection should be sustained.

12. Applicants' argument filed with respect to the objection to the drawings, has been fully considered, and the examiner agrees to withdraw this objection.

13. Applicants' arguments filed with respect to the rejections under 35 USC 112, pages 18-27, have been fully considered but they are not persuasive because as follows:

Applicants argue that the Examiner cannot have it both rejections, the rejections under 35 USC 112 and 35 USC103, the Examiner disagrees because the examiner states above that "It is noted to Applicants that due to the rejection under 35 USC 112 above, the following art rejections are based as best understood by the examiner".

Applicants argue that "It is to be understood, however, that both the positive-side voltage ratio and the negative-side voltage resistance ratio at the respective resistance junctions in the resistance-type voltage division are readily determinable and/or variable by those skilled in the art ... of the present specification", page 22, last 7 lines, examiner disagrees unless the Applicants can provide a proof to demonstrate the fact that the positive-side voltage ratio or the negative-side voltage resistance ratio has only a unique definition, and is well-known and expected in the art, or as suggested in the rejection above, referring to fig. 3, the applicants should disclose an expression or a formula used to determine a resistance division ratio at a particular selected one of the resistance junctions or intersections in terms of resistors and/or other elements, as shown in fig. 3, so as to enable one skilled in the pertinent art to understand what the applicants mean "a positive-side or negative-side voltage resistance division ratio". For the above reasons, it is believed that the rejection should be sustained.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JHN
February 5, 2004

Jimmy H. Nguyen
Examiner
Art Unit: 2673